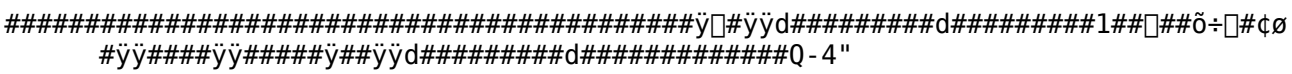

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y#ÿÿ####ÿÿ#####ÿ##ÿÿd#########d#########R###Presented by: DSDC           For
more info, send requests to:  sepg@dsdc.dla.mil
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Tþÿÿ####ÿÿ#####ÿ##ÿÿd#########d#########Ø###This presentation describes the Software Process Improvement Program (SPI) within DLA, the roles and responsibilities for SPI, the industry models used within the SPI program, and the status of SPI activities at DLA.

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#=#ÿÿ####ÿÿ#####ÿ##ÿÿd#########d#########?###At the end of this orientation, the
attendees will be able to: è
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□#ÿÿ####ÿÿ#####ÿ##ÿÿd#########d#########U###1. Recognize the three industry models used for Software Process Improvement (SPI) 0

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í#ÿÿ####ÿÿ#####ÿ##ÿÿd#########d#########@###2. Distinguish and identify their role in the SPI effort at DLA

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%ý##ÿÿ####ÿÿ#####ÿ##ÿÿd#########d#########K###Over Budget, Delayed, Less Than
Planned Functionality53% - $132.5 BillionØ
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#######d#########1##□##□÷□ü{#'ýÿÿ####ÿÿ#####ÿ##ÿÿd#########d#########F###Annual
Expenditure for Software Development in the U.S. - $250 Billion
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###ÿÿ#####ÿ□#ÿÿd#########d#########æ###In 1995, the Standish Group did a study on the efficiency and effectiveness of the software development industry. The results of the study were so disturbing they called it the Chaos Study. The study found , that the U.S. was spending $250 Billion annually on software. Of that, a full 16% was delivered on time, within budget and with the functionality the customer expected. Over half was late, over budget or lacking functionality. And almost 1/3 was never delivered at all.   When talking LARGE projects, the success rate was only 9% (rather than 16%). The international number are comparable to the U.S.When projects ran over budget, what do you think the average percentage over budget was? 89% and that was AVERAGE (some higher!)When projects ran over schedule, what do you think the average percentage over schedule was? 122%^!!!What do you think the top 3 reasons were for project failure? Lack of user input. Incomplete requirements. Failure to MANAGE changing requirements.

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Å#ÿÿ####ÿÿ#####ÿ##ÿÿd#########d#########□###The DLA Software Process Improvement (SPI) initiative is the Corporate commitment for improving its capability to produce software.SPI is a focused, sustained effort at building a process infrastructure of effective and efficient software engineering and management practices.Improving the software process results in better management of software costs and schedules, product functionality, and quality.

###ÿÿ#####ÿ□#ÿÿd#########d#########"###So what is Software Process Improvement and why do we need it? As an industry we□ve now gone from the software crisis of the 1960□s to software chaos in the 19990□s. As an industry we have much to improve. Read chart. As with any large-scale change, SPI takes a corporate commitment.

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Á#ÿÿ####ÿÿ#####ÿ##ÿÿd#########d############# Most business process improvements implemented via software Improved process stability and capability Greater predictability for size, cost, schedule, effort & documentation Increased quality in products and services Reduced rework Decreased reliance on testing to ensure quality Minimized risk to software development investments Efficient project staff start-up time; faster project start-up Dynamic allocation of resources Improved teamwork among stakeholders Improved tool usage Long term benefits from continuous SPI

###ÿÿ#####ÿ□#ÿÿd#########d#########î###Here are some of the benefits that can be seen from following the CMM and doing SPI. While many of these benefits are intangible, some are tangible, such as reduced rework which can be measured with a real dollar return on investment.

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ßúÿÿ####ÿÿ#####ÿ##ÿÿd#########d#########-###Software Process Improvement (SPI)
The Agentsÿ
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###ÿÿ#####ÿ□#ÿÿd#########d#########ç###When we started the path toward CMM Level 2 as DSAC we thought it was something that was entirely within DSAC and that we didn□t have to get anyone else involved.We now know that that thinking was in error. Everyone within DSDC as well as our customer community needs to understand the CMM and take the journey together. One of the reasons we are providing this training (in less detail) to the senior customer representatives as well as DSDC associates.Everyone must take journey.û

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÷áü#ÿèþÿÿ####ÿÿ#####ÿ##ÿÿd#########d#########;###  Higher quality products
Faster   Desired functionality#
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÷)#æý0#ÿÿ####ÿÿ#####ÿ##ÿÿd#########d#########9### All above plus Lower Total
Cost Lower Risk Projects#

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÷Y#N  ³#ÿÿ####ÿÿ#####ÿ##ÿÿd#########d#########O###  All above plus  Organization
that survives AND thrives now AND in the future#
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÷□#N ë#ÿÿ####ÿÿ#####ÿ##ÿÿd#########d#########7### All above plus Stable,
challenging work environmentÿ

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#ÿÿ####ÿÿ#####ÿ##ÿÿd#########d#########¥###ORGANIZATION PROCESS FOCUS
ORGANIZATION PROCESS DEFINITIONPEER REVIEWSTRAINING PROGRAMINTERGROUP
COORDINATIONSOFTWARE PRODUCT ENGINEERINGINTEGRATED SOFTWARE MGTÿ
```

###ÿÿ#####ÿ□#ÿÿd#########d#########¬###You saw a great deal of this model in an earlier module.SEI says, □All models are wrong, some are useful.□ Has anyone ever done a data model? Was it 100% correct? No, all models are wrong, some are useful. Models help us communicate thoughts and ideas.When we looked at the CMM, we found that everything in it applies to DSDC; however, not everything we need is in the model.Version 2 of the CMM due out in the early 99 time frame adds a Level 4 KPA called Software Product LINE Engineering. This is being added based on research done by SEI, so this model is evolving as the industry gains more insight into engineering software.There are other models we use in DSDC for SPI

###ÿÿ#####ÿ#ÿÿd#########d#########W###This model, the Opl Framework developed by SEI, was one we didnt have when we were DSAC and that we spent a great deal of time debating.At the top you have policies and standards. Policies tend to be more political while standards ten to be more logical. An example of a policy is DoD 500. Standard is MIL-STD-498 (moving to US12207). Both policies and standards put a constraint on your process.A process is a WHAT. A process is implemented by procedures.Procedures are HOWs. The tightest coupling on chart is between procedures and tools. For example, you couldnt use the Enable procedure for moving a paragraph if you were working in MS Word. Likewise, while you may do the same WHAT in terms of CM, it is unlikely that your mid-tier CM procedures would work with your main frame CM tool.The most important node on this chart is Training. Disney said, You can dream, design and build the most wonderful place in the world, but it takes people to make that dream a reality. It takes real people doing real work to make all o these other things work, otherwise you get shelfware.In the past, we have tended to focus on only one area> If I only had a policy (remember the Ada policy?). If I only bought that snazzy tool (how well have some of our tools worked in the past?) If I only had some training.SPI brings all of these things together. #

###ÿÿ#####ÿ□#ÿÿd#########d#########S###Like SW has a life cycle, so too does change. This is an iterative model for change developed by the SEI. It is useful for any type of change effort not just SPI.This model, IDEAL, which standards for the first letter in each phase was one we didn□t have in DSAC. We could never figure out when we were trying to implement the CMM in those days why we would take 3 steps forward and 1 step back. Our lessons learned helped SEI build this model. A description is available at SEIs web site.Each phase describes the purpose of the phase, the activities that must be performed, the people that must be involved, the skills needed by those people, the benefits of conducting that phase or activity, how to know when you□re ready to move to the next phase, and the consequences of skipping a phase or step. Believe me, we felt the last ones.In the Initiating phase is where you build your sponsorship and business case for the change. In Diagnosing you figure out where you are and where you want to be. in the Establishing phase you plan to get from where you are to where you want to be. In the Acting phase, you execute your activities against your plans by piloting process, policies and procedures and implementing them across the organization. In the Learning phase you collect and analyze all of your lessons learned and roll them into the next iteration of change.We are currently in the Establishing (planning) phase. We realize that we will have to go back and pick up some of the activities in the Initiating phase since many of our senior sponsors, both within DSDC and at HQ DLA, will be leaving. ü

###ÿÿ#####ÿ□#ÿÿd#########d#########□###When an SEI comes in to do an assessment, they look at 3 things: how much (in the way of policies processes and procedures) is documented? How much is understood? How mush is used?When we did our planning to get to level 2 we started with documentation. Talk about best practices workshops across more than 200 documents. Gap analysis, publication of first book. Same for Level 3.

###ÿÿ#####ÿ□#ÿÿd#########d#########Î###In our next iteration, we baselined how much was being used. The graph on your left reflects the metrics from a tool called Fast Assess which PMs use to gauge their progress of implementation against the CMM. We saw from these metrics that, while we were making progress, we were not progressing fast enough to make our goal of achieving level 2 in the time frame we wanted to.To speed up the process we provided some pilot projects with training and mentors called a process consultants who worked directly with the project teams to help them implement the level 2 processes. The graph on the right shows the metrics from that pilot project. Isn□t it amazing that when you provide written documentation as guidance, provide training, and provide a support person, how much faster a team can assimilate change?About that time, one of our customers, DLA-AQ, decreed that they wanted their projects run at Level 2 if not Level 3. CAPT Ted Case from DLA-AQ came to us and asked whether there was any way we could speed up the process of getting to Level 2 on his projects.DLA-AQ provided funding so that we could educate, train, develop skills, and mentor the DSDC and DLA-AQ and DCMC associates in the CMM Level 2 processes.

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þ¥#ÿÿ####ÿÿ#####ÿ##ÿÿd#########d#########f### Train DSDC Associates
Institutionalize CMM Level 2 Across DSDC Define all CMM L3 Key Process Areas
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###ÿÿ#####ÿ□#ÿÿd#########d#########³###So in our third iteration we began training DSDC associates (starting with associates who worked on AQ projects since they gave us the money to do that).We also began defining some of our Level 3 policies, processes and procedures.We conducted a formal assessment of the Procurement product line (which you’ll hear more about later).And, based on that assessment, we began looking at updating our operational business plans for SPI.ÿ

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□#ÿÿ####ÿÿ#####ÿ##ÿÿd#########d#########□### CMM CMM Appraisals DSDC Status MIL-
STD 498 Project Mgt Risk Mgt Configuration Mgt SQA Size/Cost Estimation Testing
Software Environments#
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à#ÿÿ####ÿÿ#####ÿ##ÿÿd#########d#########O### Requirements Definition Formal
Inspections/ Peer Reviews Function Pts/COCOMO#
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û'#ÿÿ####ÿÿ#####ÿ##ÿÿd#########d##########O### Requirements Definition Formal
Inspections/ Peer Reviews Function Pts/COCOMO#

###ÿÿ#####ÿ□#ÿÿd#########d#########□###Also in Increment 3, we developed this model. It is based on our own experience as well as a report from the Air Force titled, Software IS the Mission--Painful Lessons Learned.This model defines our approach for implementing a change. It starts with education. We define education a s a conceptual level of knowledge and terminology. It puts everyone on the same sheet of music. This four days of training is considered Education. Next comes training. Training is more in-depth knowledge that is provided such as how to write a good requirement, how to use a different design methodology, how to use a software package. Training is very role-oriented. Too often, though, managers send people to training and then expect them to come back to work and immediately apply that knowledge to their real world situation. Trouble is, when you took that Excel spreadsheet training you used Fred□s Fish Market as your example which has nothing to do with the spreadsheet you know need to build for your job. And the instructor is no longer available for questions. That□s where Skill Development and Mentors come in. Mentors are provided to assist associates in applying what they□ve learned to real products and projects in the real world. At DSDC our mentors are the process consultants, the SEPG and, as we transition the functions to the mission areas, the subject matter experts in the vertical organizations.

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Project Tracking & OversightSoftware Subcontractor ManagementSoftware
Configuration ManagementSoftware Quality Assurance
```

###ÿÿ#####ÿ□#ÿÿd#########d#########1###And this is the result of the assessors looking at what we had documented, what our associates understood, and what we had implemented.Tell how the green dots satisfied level 2 and 1 KPA at level 3. Partially satisfied much of Level 3. Although we did not satisfy any of the goals for SPE, our findings showed strengths in that KPA.This chart only shows the numbers. Of more importance are the actual strengths, weaknesses, areas for improvement and recommendations. Go out to our web page and read it and you will see that the findings characterize DSDC.ü

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#□### Implement CMM L3 Across DSDC Through Use of Education, Training, Skill Development and Mentoring Conduct Formal Assessment(s) of all DSDC Product Lines#

###ÿÿ#####ÿ□#ÿÿd#########d#########@###And this chart shows where we need to go in the next year or so.

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#|#ÿÿ####ÿÿ#####ÿ##ÿÿd#########d#########è### Need to Maintain Improvement Momentum Need to Develop As Professionals Need to Select Methods as well as Tools Previous Successes Prove □DSDC Can Do□ Ultimately, Everyone Must Be Involved HQ DLA Sponsorship & Investment is Key

###ÿÿ#####ÿ□#ÿÿd#########d#########f###And this is what we learned from having taken the journey from Level 1 to Level 2 in one product line.

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t#ÿÿ####ÿÿ#####ÿ□#ÿÿd#########d#########R###Click to edit Master text styles
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